

Review of hess-2019-597 “Tracking the global flows of atmospheric moisture” Obbe A. Tuinenburg and Arie Staal

Dear Dr. Louise,

Thank you for sending the manuscript for a re-review. I read the responses to my reviews and the corresponding changes made in the revised manuscript. The authors have addressed most of my minor technical comments and to some extent my specific major comments. However, I feel that a few of my specific comments should to be addressed more scientifically.

Specific Comments:

1. Regarding my comment 4: Surely “True tracking” is not possible, but I strongly feel that an independent tracking model should be used to generate observations for a reasonable verification and comparison of different settings here. Given that the present operational moisture tracking models, such as Hypilt”, are not hard to run and that only one month (July 2012) is to be evaluated, I think adding this independent set of observations would be a valuable addition to the manuscript.
2. In response to my specific comment 3, the structure added in methods section seems to focus on Lagrangian trajectory analysis only; the authors may modify it to incorporate Eulerian framework as well.
3. In the section 3.2, “The number of parcels has a small effect on the level of detail” on line 290, a cautionary note should be added for convective and other similar events, where the number of particles may play a significant role.
4. The title of the manuscript is too broad, perhaps it can be made more specific to sensitivity analysis of different tracking choices.

Minor:

1. Line 155-166. Please rephrase the two sentences for more clarity.

Munir Ahmad Nayak

2. Section 3.1 Paragraph 1: Again, the numbers are already in Table 1 for the reader to look at quantities. In this section, you might want to present general clear qualitative differences, just in one or two lines. The main text should not be overloaded with numbers and mathematical terms, see for example Lines 360 to 370. It would be much easier to read qualitative information than numbers, and the amount of text would be reduced significantly. For example, the Lines 369-370 can be reduced to one line by saying “increasing the temporal resolution increased the running time in all cases.”
3. Figures 6, 7 and other similar figures: Since the results are on difference, for example L325, I suggest showing relative differences for a clear visual and quantitative evaluation.
4. Figure S24B: The unusual straight color line in this panel should be removed.